

# MARINE REVIEW.

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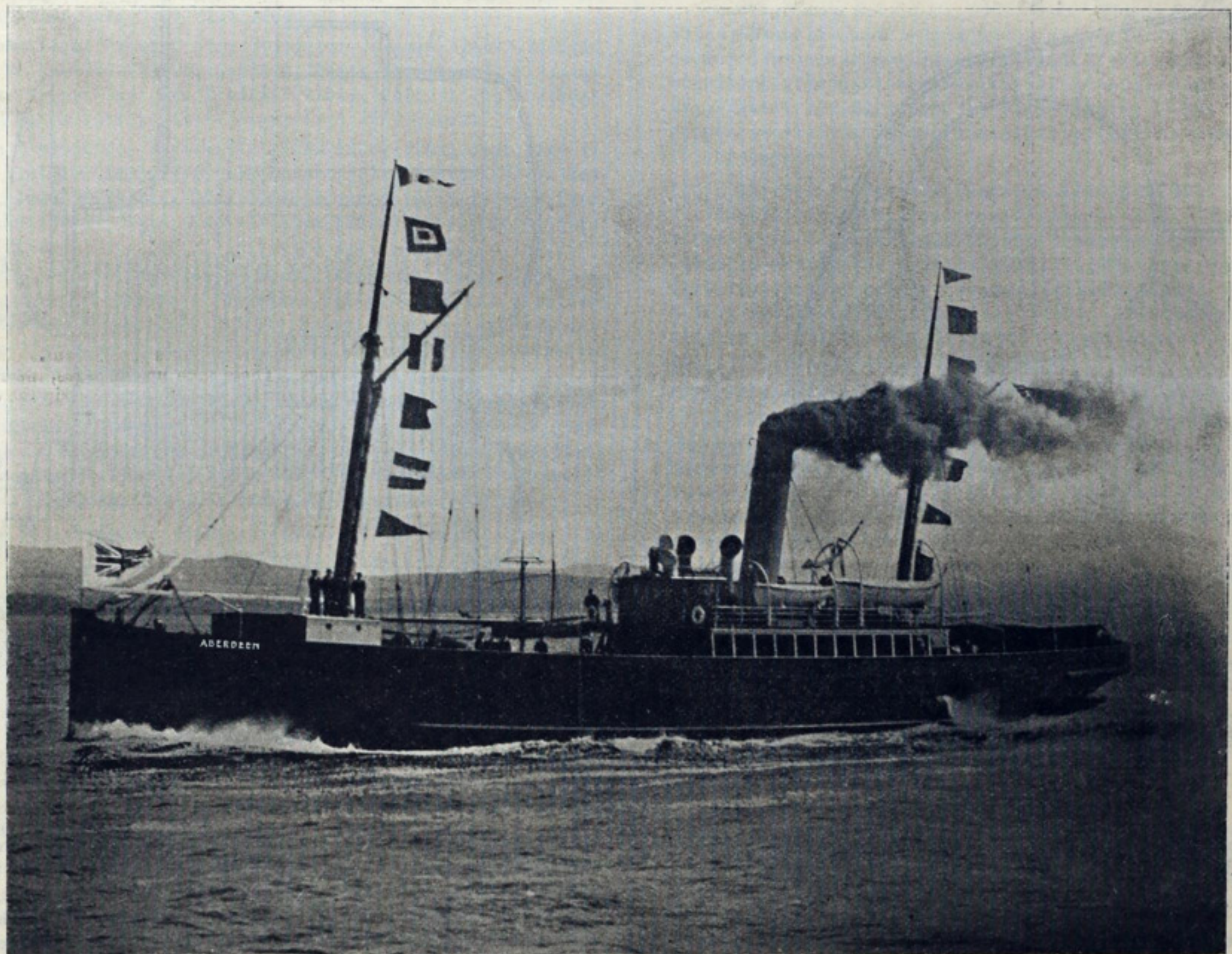
## Dominion Government Steamer Aberdeen.

Through the kindness of Wm. P. Anderson, chief engineer of the Canadian department of Marine and Fisheries, the REVIEW is enabled to present on this page a view of the dominion government steamer Aberdeen, and on the following page engravings of the water tube boilers with which she is fitted. The boat, which was built in Glasgow, has been commissioned for three months, and her chief engineer reports that in all respects the boilers are giving satisfaction, being economical in fuel, easy to get up and keep up steam and requiring no repairs. The Aberdeen is 180 feet long, 31 feet breadth and 19 feet 3 inches moulded depth. Engines are of the quadruple expansion type. Leading particulars of the vessel are:

Number of engines.....One; quadruple expansion  
Diameter of cylinders.....18, 28, 35 and 54 inches  
Stroke of piston.....38 inches

Number of pumps.....Two  
Diameter of pumps.....3½ inches  
Stroke ".....16 inches  
Propeller.....Built type; four blades; manganese bronze  
Diameter of propeller.....12 ft  
Pitch of propeller.....16 ft  
Surface ".....43 sq. ft  
Speed of vessel.....13 knots

The patentees of the boilers are Fleming & Ferguson of Paisley, Scotland. An evaporative efficiency of 10 pounds of water per hour per pound of coal is claimed for these generators with natural draught. The manufacturers claim that they are especially suitable for large powers, it being possible to take as great or even greater powers than has been the practice with the cylindrical boilers, and they also obviate the subdivision of large power into a great number of boilers with their numerous fittings and details. The size of tubes is not reduced to a



CANADIAN GOVERNMENT STEAMER ABERDEEN.

Clearance, top.....½ inch  
" bottom.....¾ inch  
Maximum revolutions per minute.....96  
Indicated horse power with natural draught.....1,510  
Steam pressure in boiler.....220 lbs  
Boilers.....Patent "Clyde" water tube  
Number of boilers.....Two  
Working pressure.....220 lbs  
Diameter of drums.....Top drum 6 ft.; bottom drum 3 ft  
Diameter of tubes.....2½ inches outside  
Heating surface in one boiler.....1,412 sq. ft  
Grate area.....50 sq. ft  
Weight of one boiler complete without water, 27 tons, 13 cwt., 3 qrs  
" " " with water, 35 tons, 14 cwt., 1 qr  
Feed pumps.....Ordinary type, wrought off air pump levers

diameter that makes them liable to be choked, but is kept of a diameter which enables them to be readily cleaned. Drums are of a size that allows of a good supply of water always being in the boiler, as well as an ample steam space, doing away with all liability to prime, and at the same time making regularity of water level a certainty. The whole of the inside of the boiler can be easily examined by taking off the ordinary manhole doors, no special jointed doors or caps being required to get inside to tubes. There are no landings or joints in fire and no liability to leakage through expansion strains. In the event of any tube requiring renewal it can be drawn into the upper drum and replaced in the same way without cutting out any of the other tubes or parts of casing. The manufacturers say they are not the lightest possible water tube boiler, nor have they the greatest amount of heating surface—too often gained at the sacrifice of working efficiency—but they are fit to stand the every-day wear and tear of constant service.



### Around the Lakes.

W. I. Babcock of the Chicago Ship Building Company is a graduate of the Morgan Iron Works, New York.

The Craig Ship Building Company of Toledo expects to have its new 400-foot dry dock completed about May 1.

Capt. Robert Hamilton, veteran master of Canadian vessels, died at Hamilton, Ont., Monday, aged seventy-three years.

The tug that is being built by the Union Dry Dock Company, Buffalo, for O. W. Cheney will be about 75 feet over all and will have an engine 22 by 28 inches.

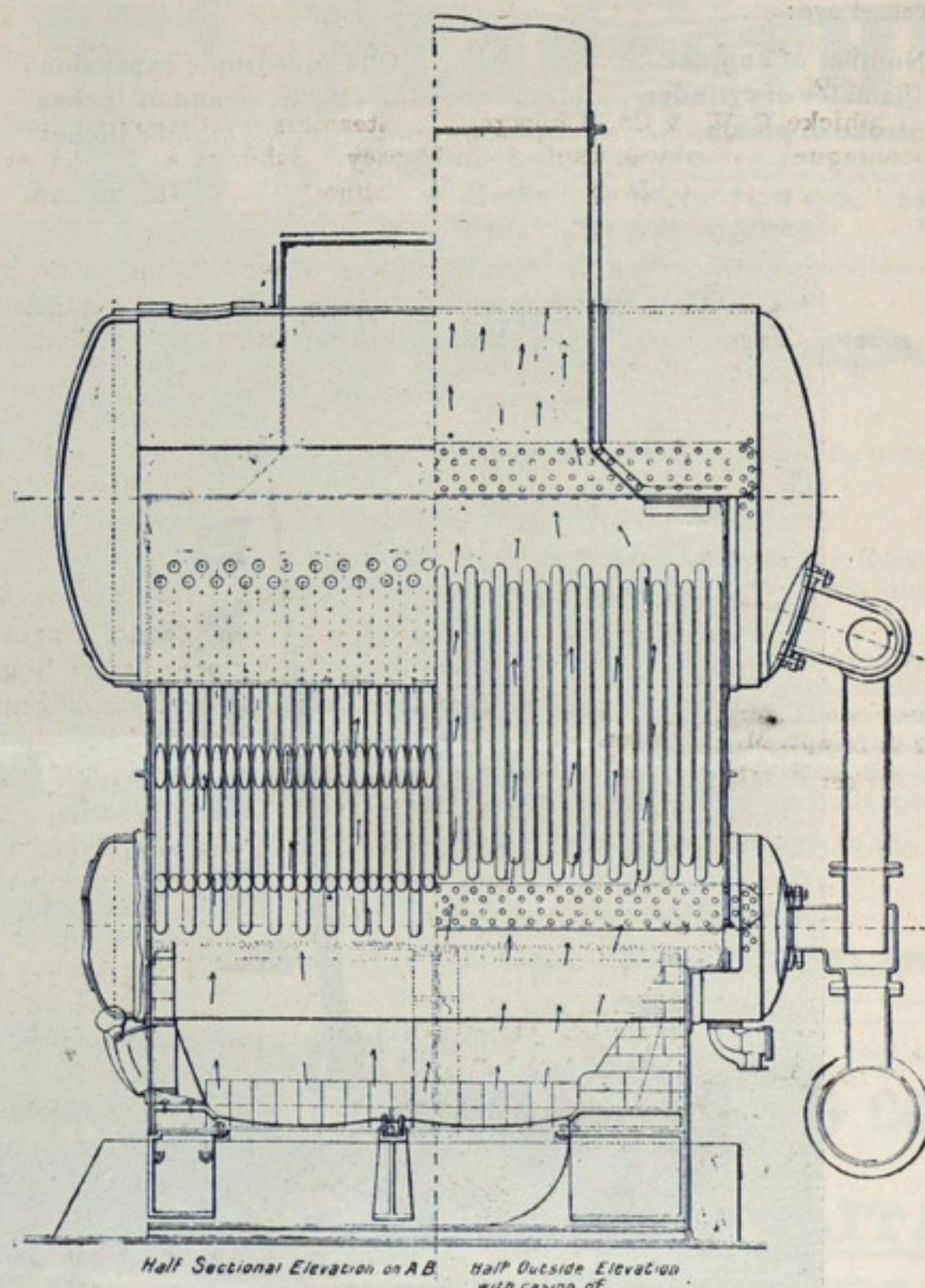
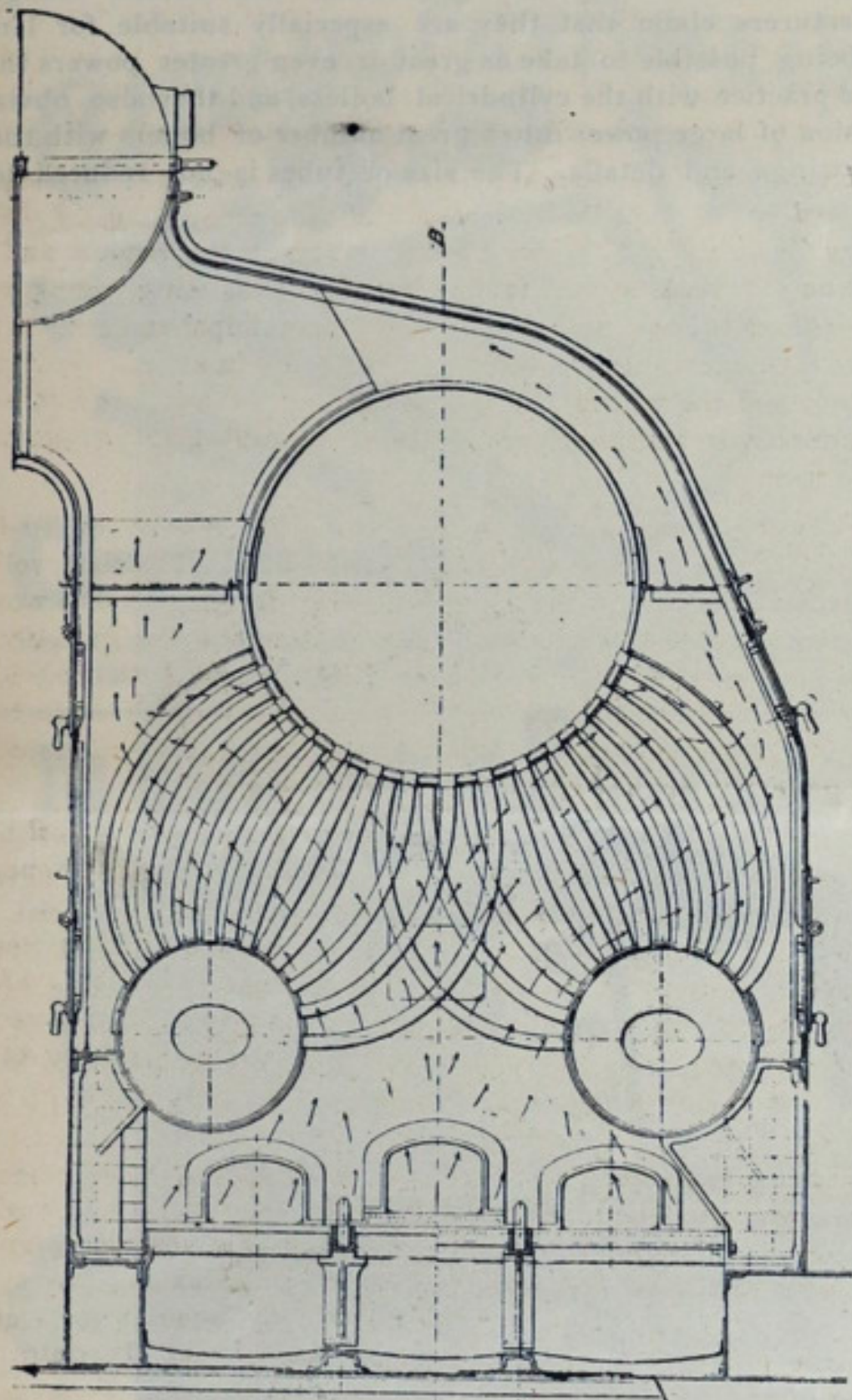
A year ago the grain afloat in lake vessels aggregated 7,275,000 bushels; now the amount is 4,912,114 bushels, of which 4,065,215 bushels is consigned to Buffalo.

The Wolverine Electric Company of Detroit will equip the small passenger steamer Arrow, being built by the Detroit Dry Dock Company, with an electric plant, which will include 125 lamps and a Huntington search light.

Lockerbie of Detroit failed to take the contract on a bid of 10 cents, which he made, the matter has been hanging fire in the city council as the result of an effort to give the contract to the next lowest bidder, Messrs L. P. & J. A. Smith of Cleveland, but the executive branch of the city government has finally made the point of calling for new bids.

When Detroit river lights are placed in operation shortly, the lights of the Grosse Isle south channel range, which mark the line for running the main channel of the Detroit river from Lime-kiln crossing to its intersection with the line marked by the lights of the Gross Isle north channel range, will be exhibited each from a square, white pyramidal, inclosed wooden tower, with a gallery with black hand rail at the top of the square part, and surmounted by an octagonal lantern having three sides glazed and a copper roof. The characteristics of the lights and their geographical position will not be changed.

A cargo of 152,000 bushels of corn has just been taken on by the big steamer Centurion at Chicago. This is 4,188 bushels more than the cargo of corn carried by the Centurion from Chicago to Erie in September, 1893, and is probably sufficient to maintain the corn record for the Cen-



"CLYDE" WATER TUBE BOILERS OF CANADIAN GOVERNMENT STEAMER ABERDEEN.

Hon. Amos Townsend of Cleveland, whose death occurred a few days ago in Florida, where he had gone for his health, represented the Cleveland district in congress at one time. He not only secured liberal appropriations for Cleveland harbor improvements but was one of the most successful workers in behalf of river and harbor improvements generally throughout the lakes.

The big sheet containing regulations for the government of pilots on the lakes, and which is usually framed and hung up in the pilot house of steamers, has been revised in accordance with the act of Feb. 8 providing special rules for the navigation of lake vessels and is being sent out from Washington to local inspectors. An engraving of the Northern line passenger steamer North West adorns the top of it.

A Buffalo correspondent says: "Buffalo is short of facilities for handling the great amount of miscellaneous freight that comes here, and the return of better times must see more warehouses built, especially for handling and storage of flour, which now comes in at the rate of 10,000,000 packages a season. There is a long line of water frontage now protected by the breakwater, but which will not be accessible till there is a bridge across lower Main street somewhere."

Cleveland's public works department is again to advertise for bids on harbor dredging to extend over a period of five years. Since Contractor

turion until some of the big 400-foot steamers now building are given an opportunity to test their capacity in the grain trade. The S. S. Curry is loaded in Chicago with 246,603 bushels of oats, and it is expected to put in another jag that will make the cargo more than 250,000 bushels. It is unfortunate that the Centurion could not also be given a cargo of oats in order that a definite comparison might be made of the carrying capacity of these two boats.

Charles W. Ward of Charleston, W. Va., who is in the business of making tubulous boilers, secured at the last meeting of the United States board of supervising inspectors of steam vessels, approval for three types of tubulous boilers. They are known as Ward's torpedo boat boiler, Ward's torpedo boat boiler No. 2 and Ward's straight tube launch boiler. Improvements on the Roberts safety water tube boiler, made by the New York company of the same name, also secured approval from the board.

A COPY OF THE PHOTO-GRVURE SUPPLEMENT OF DIRECTORS OF THE LAKE CARRIERS' ASSOCIATION, TOGETHER WITH THE LARGE ENGRAVING OF THE STEAMER NORTH WEST, BOTH OF WHICH WERE CONTAINED IN RECENT BIG ISSUES OF THE REVIEW, WILL BE MAILED IN A PASTEBOARD TUBE TO ANY ADDRESS UPON RECEIPT OF 50 CENTS IN STAMPS.



### Appointments of Masters and Engineers.

Ash James, Buffalo, N. Y.: Steamer—Pascal P. Platt, Capt. D. P. Wright, Engineer Edward Riley. Schooner—Annie M. Ash, Capt. Joseph Collin.

Grummond Mackinac Line, Detroit, Mich.: Steamers—State of Michigan, Capt. F. R. Dale, Engineer M. J. Gilligan; Flora, Capt. John J. Pearson, Engineer Wm. Campbell.

Cleveland & Buffalo Transit Company, Cleveland, O.: Steamers—State of Ohio, Capt. John Edwards, Engineer J. G. Randall; State of New York, Capt. W. H. Smith, Engineer A. Millroy.

Pack, Gray & Co., Cleveland, O.: Steamers—Simon Langell, Capt. David Carrier, Engineer Anthony Ryan; Kalkaska, Capt. Henry Fish, Engineer—. Schooner—Arenac, Capt. Henry Davis.

Holland, Nelson, Buffalo, N. Y.: Steamer—C. F. Curtis, Capt. James Cunningham. Schooners—Isabel Reid, Capt. Peter Johnson; T. S. Fassett, Capt. Albert Renders; N. C. Holland, Capt. Peter Keischgens.

Recor, E. C., St. Clair, Mich.: Steamers—Mark Hopkins, Capt. S. A. Lyons, Engineer S. G. Merrill; F. W. Fletcher, Capt. H. D. Moore, Engineer Wm. Brake. Schooners—Porter, Capt. N. McDonald; Golden Rule, C. W. Recor.

Elphicke, C. W. & Co., Chicago, Ill.: Steamers—Arthur Orr, Capt. C. Z. Montague; Josephine, Capt. John Massey. Schooners—T. L. Parker, Capt. Jas. Langan; Gifford, Capt. E. J. Kohnert; C. P. Minch, Capt. Ed Myers; Cheney Ames, Capt. Thos. Myers.

Mathews Line, Toronto, Ont.: Steamers—Niagara, Capt. J. Morgan, Engineer W. Calcott; Clinton, Capt. C. Coons, Engineer J. S. Adams. Schooners—Lisgar, Cap. Hy. Brooks; Chilton, Capt. G. W. Maitland; Emerald, Capt. Jno. Philp; Clara Youell, Capt. W. J. Colwill.

Union Transit Co., Buffalo, N. Y.: Steamers—Avon, Capt. Thos. H. Stafford; Portage, Capt. S. E. Chatterton; John M. Nichol, Capt. Geo. W. Bryce; John V. Moran, Capt. Robt. Rhynas; W. H. Stevens, Capt. Lewis Elliott; Eber Ward, Capt. William McLean; Jas. Fisk, Jr., Capt. M. G. McIntosh.

Curtis & Brainard, Marine City, Mich.: Steamers—Miami, Capt. J. A. Ward, Engineer Ed. Flanagan; Cherokee, Capt. John Hagan, Engineer D. M. Foster; Mohegan, Capt. William Hagan, Engineer James Regan. Schooners—Chippewa, Capt. John Davidson; Mingoe, Capt. A. Snelgrove; Dayton, Capt. M. P. Lester.

Parker & Millen, Detroit, Mich.: Steamer—B. W. Blanchard, Capt. Thos. Meikleham, Engineer E. W. Tilley. Wrecker—Favorite, Capt. Martain Swain, Engineer Geo. L. Simmons. Tugs—Saginaw, Capt. Thos. Hayes, Engineer M. Clancey; Balize, Capt. Thos. Carney, Engineer D. W. Blauvelt; Onaping, Capt. J. E. Tobin, Engineer Neil Maitland.

Parker, A. A., Detroit, Mich.: Steamers—A. A. Parker, Capt. J. T. Hutton, Engineer James Falconer; John Oades, Capt. Timese Lemay, Engineer H. L. Merrill; John Pridgeon, Jr., Capt. D. N. Sherwood, Engineer John Mogan. Schooners—B. W. Parker, Capt. Henry Morey; Red Wing, Capt. John Anderson; San Diego, Capt. John Mason; Saveland, Capt. William Lennon.

Goodrich Transportation Company, Chicago, Ill.: Steamers—Virginia, Capt. H. E. Stines, Engineer Phillip Roth; Indiana, Capt. A. Gallagher, Engineer Ray Flint; City of Racine, Capt. John Gee, Engineer James Parks; Atlanta, Capt. William Nicholson, Engineer Jerome; Menominee, Capt. John Wilson, Engineer J. Calan; City of Ludington, Capt. John Raleigh, Engineer J. Bushman; Chicago, Capt. George Wittey, Engineer G. Neidert; Muskegon, Capt. Ed. Carns, Engineer T. Dorey.

Millen, James W., Detroit, Mich.: Steamers—Iron King, Capt. Wm. F. Millen, Engineer John Hegemer; Iron Chief, Capt. Wm. A. Irvine, Engineer Aug. Cobo; Iron Duke, Capt. N. L. Miner, Engineer Jacob Zeh; Iron Age, Capt. H. W. Bogert, Engineer John Phelan; Greyhound, Capt. Bert Baker, Engineer D. J. McMillan. Schooners—Iron Queen, Capt. A. J. Mahon; Iron Cliff, Capt. Thos. Fitzsimmons; Iron State, Capt. W. W. Carter; Iron City, Capt. M. J. Podgeon.

Dulac, Wm., Mt. Clements, Mich.: Steamers—F. R. Buell, Capt. C. W. Woodgrift, Engineer John Deihl; Canisteo, Capt. W. J. Lynn, Engineer W. G. Boynton; A. Weston, Capt. M. Hyde, Engineer John S. Ranney; C. A. Street, Capt. A. P. Gallino, Engineer C. F. Lamb. Schooners—J. B. Lozen, Capt. John B. Lozen; A. Stewart, Capt. John Destrois; S. B. Pomeroy, Capt. Jerry Cottrell; Eleanor, Capt. Frank Duboy; Jennette, Capt. Ed. Moore; Elvina, Capt. Wm. Campau; Fulton, Capt. Frank Laforge.

Ogdensburg Transit Company, Ogdensburg, N. Y.: Steamers—J. R. Langdon, Capt. Harvy Brown, Engineer Jno. N. Phillips; W. A. Haskell, Capt. Daniel Murphy, Engineer A. D. Houghton; W. J. Averill, Capt. W. D. Wait, Engineer Harris Higgins. Gov. Smith, Capt. W. S. Shay; Engineer James Turnbull; F. H. Prince, Capt. D. A. Kiah, Engineer D. J. Costello; A. McVittie, Capt. W. H. Williams, Engineer Morris Gorè; W. L. Frost, Capt. E. B. Shay, Engineer James Chestnut; H. R. James, Capt. James Owens, Engineer Robert Chestnut.

### Books and Other Publications.

*Meteorology, Weather and Methods of Forecasting.* By Thomas Russell, U. S. Assistant Engineer. Published by Macmillan & Co., New York. Price, \$4.

The contents of this work are based on the practice of the United States weather service in the prediction of coming changes, by the study of the weather maps of present and past atmospheric conditions. The work contains also a short account of floods and the methods of predicting river heights for some points along the Mississippi river and its tributaries. The various forms of meteorological instruments are described with reference to principles involved in their construction.

*Theoretical and Practical Ammonia Refrigeration.* By Iltyd I. Redwood. Price \$1.00. Published by Spon & Chamberlain, New York. This book, on a

subject of increasing importance, is written with a view to giving those who are connected with the operation of ammonia refrigerating plants a more intelligent idea of what they are doing. In many instances engineers in charge of such plants run them only by rule of thumb methods, and, knowing nothing of the why and wherefore, are, in event of the conditions being changed, unable to reason out what will be the result from the changed conditions and what other changes ought to be made to counterbalance them. The book is systematically arranged and well illustrated. Numerous tables to save long computations are also given.

*Edwards' Examination Questions and Answers for Engineers and Firemen, Stationary and Marine.* By Emory Edwards, M. E. Price, \$1.50. Published by Henry Carey, Baird & Co., Philadelphia. This is the second and enlarged edition of a book written for the purpose of assisting young engineers and firemen to pass the examinations of municipal and government inspectors. The questions are asked and answered in an easy conversational manner and are within the understanding of any candidate. It pertains generally to stationary practice, but contains good suggestions for any engineer.

*Official Records of the Union and Confederate Navies of the War of the Rebellion.* Published by the Navy Department, Washington, D. C. The first volume of these records gives promise of a very interesting series. The work is published by authority of the act of July 31, 1894, under the direction of the secretary of the navy, and prepared by Lieut. Comdr. Richard Rush, U. S. N., superintendent of naval war records. The demand for the books has been quite large, and senators and representatives are understood to have quite generally exhausted their shares of them.

*Geological and Natural History Survey of Minnesota. Twenty-third Annual Report for the year 1894.* By N. H. Winchell, State Geologist. This is a report to the board of regents of the University of Minnesota, and is a part of a large number of publications pertaining to the geological and natural history survey of the state. It contains a great deal of valuable official information relative to the gold mines of the state that are now attracting attention, as well as a mass of statistics and other matter relative to the Mesabi and Vermilion iron mining regions.

A small book containing a collection of engineering tables, rules and formula has been published by the Canadian Marine Engineers' Association of Toronto. It is similar to books published each year by branches of the Marine Engineers' Beneficial Association in lake cities, and is gotten out with a view to increasing interest in the Canadian association. It was compiled by O. P. St. John, 426 Queen street, west, Toronto, who is president of the organization.

The Commercial News of San Francisco publishes each year a list of vessels owned on the Pacific coast. The list as corrected to Jan. 1, 1895, gives official numbers, dimensions, gross and net tonnage, name of managing owner, home port, horse power, etc. The list is arranged alphabetically and is gotten up in pamphlet form. It is distributed without charge.

Proceedings of the deep waterways convention, held in Toronto in September last, have just been published in pamphlet form and are being distributed with the compliments of the mayor and corporation of the city.

### Cost of England's Fast Torpedo Boat Destroyers.

British naval authorities have just given out information relative to prices charged for a large number of the torpedo boat destroyers now being built for the government by private firms. The prices range from \$170,185 to \$195,565 each. These vessels are about 200 feet long, of about 230 or 240 tons displacement, and with engines of 4,000 to 4,500 indicated horse power are all to attain a speed of 27 knots. A large number of them already in commission have exceeded this speed by better than two knots.

The contract price of the hull and machinery the 14,000 ton cruiser Terrible, with Belleville boilers, to give a speed of 23 knots, is \$2,711,735. This boat is being built by Messrs. Thompson, Clydebank. A sister ship, the Powerful, building at Borrow, is to cost \$2,676,260.

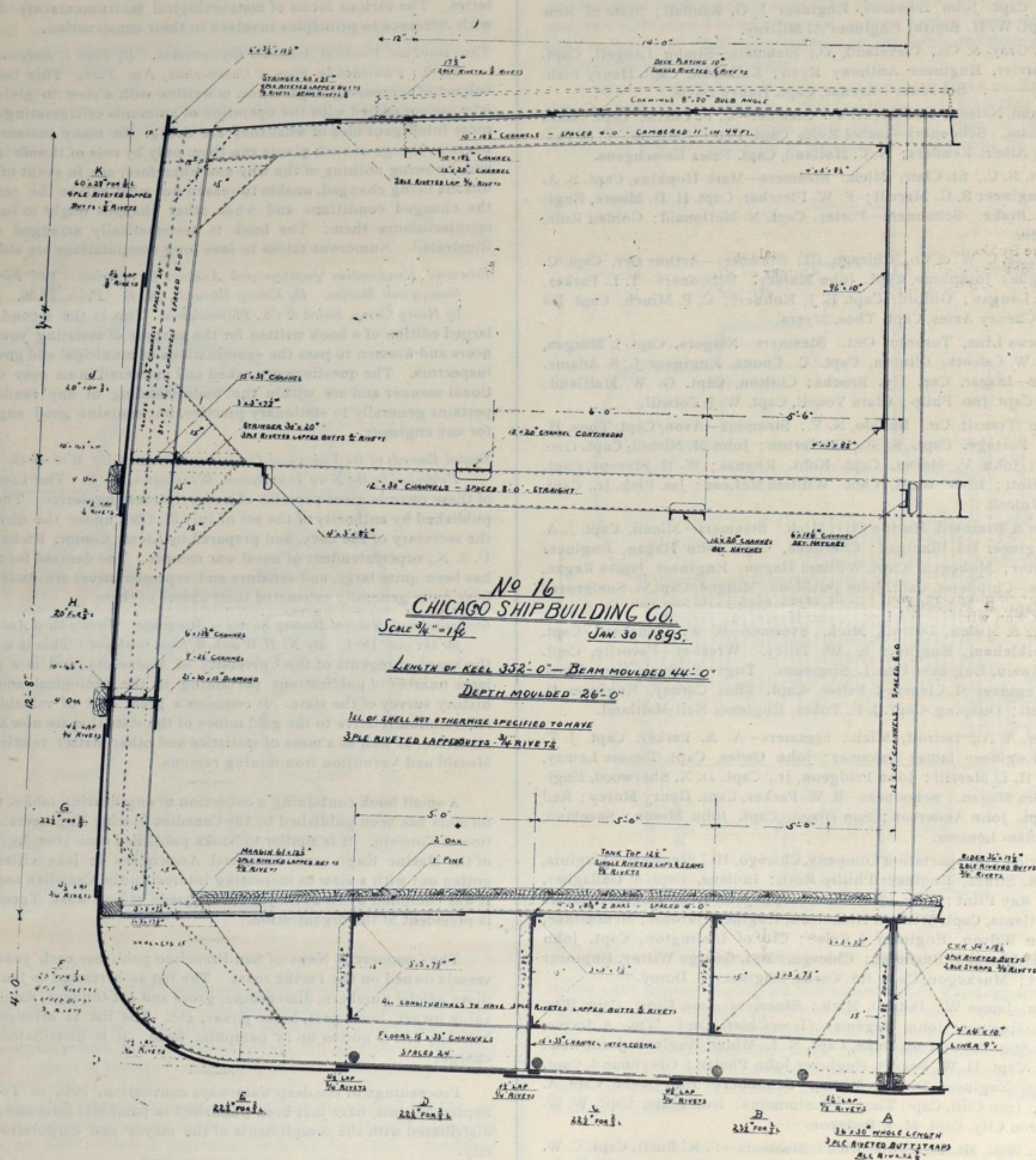


### Of 4,000 Gross Tons Capacity from Lake Superior.

Owners of the big steel tow barge being built by the Chicago Ship Building Company to tow with the wooden steamer Aurora have kindly furnished the REVIEW with the accompanying cross-sectional plan of the boat, giving details of construction. This vessel will be the largest tow barge on the lakes. It is expected that she will average full 4,000 gross tons of cargo from Lake Superior, on  $14\frac{1}{2}$  feet draft, which will be about the limit until the big improvements now under way are completed. Of

### To Furnish Aluminum to Foreign Navies.

President Alfred E. Hunt of the Pittsburg Reduction Company expects to sail for Europe on April 27, to confer with the representatives of several foreign governments with a view of securing torpedo and naval contracts. He is willing to be quoted as saying that his company hopes to supply our own government with aluminum for three new torpedo boats, and he called attention to the recent change in the legislation governing their construction, permitting, in the discretion of the gov-



CROSS SECTION OF TOW BARGE BUILDING AT SOUTH CHICAGO—CAPACITY 4,000 GROSS TONS.

course, there are a large number of steamers of greater capacity than this boat. Dimensions of the new barge are 352 feet over all, 44 feet moulded beam and 26 feet moulded depth. She will have no spars or sails of any kind. Details as to water bottom and other features of construction are given in the drawing.

At its last annual meeting the board of supervising inspectors of steam vessels approved the following devices: Aniello life boat, presented by W. M. Baker; Crane pop safety valve, presented by the Crane company; Ammen metallic balsa or life raft, presented by Rear Admiral Daniel Ammen, U. S. N.

ernment's naval officials, the use of steel or other metal, the "other metal" being understood to refer to aluminum. The parts for which aluminum is especially well adapted include angles, plates, castings, beams, channels, and other sections. The company already furnishes our navy department with various aluminum articles, and the use of the metal by our government is rapidly growing.

The British admiralty announces satisfaction with the results of trials of water tube boilers, both in regard to the Thornycroft boilers in the Speedy and the Belleville boilers in the Sharpshooter, and also in the six torpedo boat destroyers already tried and which have tubulous boilers.



### An Important Salvage Case.

It is a long time since a salvage case has been tried on the lakes. Salvage cases have of late been settled by arbitration or through agreements among the parties interested. On Thursday of this week, however, a case is to be opened before United States District Judge Seaman in Milwaukee that will attract considerable attention, not so much on account of the amount of the claim as the circumstances, which are of such common occurrence as to make the finding, whatever it may be, a precedent for the settlement of other claims in the future. During the closing days of navigation in December last, the steamer Spokane, owned by the Wilson Transit Company of Cleveland, was bound down Lake Michigan with a cargo of merchandise valued at about \$225,000. The insurance value of the Spokane is \$135,000, so that vessel and cargo were together worth approximately \$360,000. While on the east shore, forty or fifty miles below the Manitous, the Spokane broke her main shaft and was picked up in a helpless condition by the steamer City of Venice, of which Edward Smith of Buffalo is managing owner. The Venice towed the Spokane to Milwaukee, giving up to this service about ten hours of time, that was, of course, very valuable on account of the season being so near to a close, but the weather while the disabled boat was being towed to Milwaukee was not bad. For this service, Mr. Smith immediately libeled the Spokane and her cargo on a salvage claim of \$15,000. Harvey D. Goulder of Cleveland and C. E. Kremer of Milwaukee will represent the Spokane and her cargo, and it is understood that Van Dike & Van Dike of Milwaukee have been retained by the owners of the Venice.

### A Frenchman's Letter.

The curious dialect of the French-Canadian, who twists the personal pronoun and refers to a female as "he" and a male as "she" is as familiar to men on the lakes as the towns along the Detroit and St. Clair rivers, where the odd characters of lumber woods fame are to be found in great numbers. Capt. Frank Welcome of Buffalo, who was first officer on the big passenger steamer North West last season, recently received a letter from Peter La Champaign, who lives in Algonac, Mich., and who, writing as he talks, brings out the distinguishing traits of the French-Canadian character. The letter, just as it was written, is printed herewith:

Algonac Feb 21 1895

Capt. Welcome Dear Sur I hope you go axuse me fe i go write on you cos i hant got much quant on you. but de rasen what i rite on you for is dis you no i got won wimens and i go ax you if you can give him a job to go cook on your bote I mete Paul Socia de odder day and she tole me you was gone to sale big bote dis sumer and she say to me like dat you rite to Capt. Welcome she live on buflo and you ax him fi es got his cook an fi he hant got it i bet you tomushrat she give it a job Well i tole Paul i go rite on you an i hant got much educashun but sam tam i can rite on you wat i want. Now Coptin dis wimens wat i got he is a good wan he bin cook on de lumber wood tre fore fiv year an al dem mans in de lumber wood she say he is a good wan an he hant belong on no unun Paul she say dat is good wan on his favor and she say i kin go on de bote to an ack lik deck han on same tam. now Coptin i go ax you nuder faver you no i got fore children one of it is a girl an he can help his mudder a good dels dis girl wat i got he got terchene old on de nex wan she got hate old an de tird wan he go fore old den i got nuder wan he got no old tol he jes come las nite, but wen he git more old like de oder wans he can help de old man to now Coptin de favor wat i go ax on you is dis kin i fech al my family on de bote fi i kin i got chanc to rent my plas cos Jule Paquet she tole me fi i go on de bote an take al of it wich me she go giv me hate doler a mont for my plas an Jule shes hones man you no som mans wen you trus her cars los for you but ant so an Jule. now Coptin i hope you gone giv me al dem favor wat I ax on you. I no yool be glad wen we al git on de bote. Now coptin i hant ax you wat you gon e pay cos Paul she tole me wen we hant belong on no unun we kin ax al we lik so i gon trus on you for dat.

by gosh i was com nere freget som ting i mete my brudder law dis morning an she say to me you go rite on Copin Welcom an i say yes an she say to me to ax you fi you wil giv him job to go henginer on yoor bote mabe you hant got no quaint on him wel i kin tol you she was good was she ben run trash mashen for tre year an she hant kil no body yet. all de mans on Algnack talk good on her an tole me to tel you she hant belong on no unun to now captin fi you want tak my brudder law for henginer you kin rite on him dis way

Constant Pardee

Swan Creek

Michigan Stat

she wil git it quick cos she go on de pos ofice evry day cas al dem clerk in de pos ofice on Swan Creek no her now captin i go ax you agin to give me al dem favor wat i ax on you and fi you do i kin com an sine contrck for de al of it. well i tink i go stop rite is time to go to bid is ten o'clock an dat litte boy wat come las nite he cryin an i mus go to look on him we sen al our regard on you an hope yoor family is wel goot nite write so quick as you cant to

PETER LA CHAMPAIGN,  
Algonac, Michigan Stat

### The Steamboat Inspection Service in 1894.

From the reports of supervising inspectors of steam vessels throughout the United States covering the calendar year 1894, there has been made up in the office of the inspector-general of steam vessels at Washington a summary of interesting statistics pertaining to the service. The REVIEW has been favored with the copy of this summary which follows:

INSPECTION.	
Steamers inspected.....	7,861
Tonnage of steamers inspected (net registered)...	1,614,225.42
Boilers inspected—	
Steel.....	7,239
Iron.....	3,604
Total number boilers inspected.....	10,843
Boilers found defective—	
Steel.....	442
Iron.....	302
Total number of boilers found defective.....	744
Boilers gave way under hydrostatic pressure—	
Steel.....	63
Iron.....	42
Total number of boilers gave way under hydrostatic pressure..	105
OFFICERS.	
Received original license—	
Masters.....	258
Joint masters and pilots.....	5
Mates.....	223
Pilots.....	977
Joint pilots and engineers.....	209
Engineers.....	1,106
Special engineers.....	23
Total number of officers receiving original license.....	2,801
Received renewal of license—	
Masters.....	9,356
Joint masters and pilots.....	374
Mates.....	1,944
Pilots.....	7,705
Joint pilots and engineers.....	432
Engineers.....	16,328
Special engineers.....	49
Total number of officers receiving renewal of license ...	36,188
Grand total of officers licensed.....	38,989

CASUALTIES—LOSS OF LIFE.	
Lives lost by—	
Explosion or accidental escape of steam.....	15
Collision.....	8
Fire.....	6
Wreck or founder.....	79
From other causes.....	122
Total number lives lost.....	230*

LOSS OF PROPERTY.	
Property lost by—	
Collision.....	\$ 191,698.86
Explosion.....	7,900.00
Fire.....	659,458.50
Snags, ice, rocks, breaking machinery, etc....	245,360.00
Wreck or founder.....	762,235.00
Total value of property lost.....	\$1,866,652.36
Decrease in value of property lost over previous year...\$	968,303.93
Decrease in number of steamers inspected over previous year..	2
Increase in tonnage of steamers inspected over previous year..	6,328.68
Increase in number of boilers inspected over previous year....	58
Increase in officers licensed over previous year.....	870

\* Same number as in previous year.

### Notices of Shoals and Other Obstructions.

The hydrographic office has just issued the first of the 1895 pamphlets known as "Notices to Mariners." The pamphlet shows care in preparation and it is evident that the hydrographic officials have done more than depending upon a reprint of notices from the light-house board pertaining to lights, fog signals, etc. They have received from harbor masters, light-keepers, life saving station keepers and various other sources reports of shoals, bars at harbor entrances, etc., all of which are printed in the pamphlet. A copy of it may be obtained by addressing the hydrographic office, Washington, or by applying at the branch offices in Chicago or Cleveland.





DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,341 vessels, of 1,227,400.72 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons and over that amount on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1894, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels.....	1,731	843,239.65
Sailing vessels.....	1,139	302,985.31
Canal boats.....	386	41,961.25
Barges.....	85	39,214.51
Total.....	3,341	1,227,400.72

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30, 1890.....	Number.	Net Tonnage.
" " " 1891.....	218	103,515.00
" " " 1892.....	204	111,856.45
" " " 1893.....	169	45,168.98
" " " 1894.....	175	99,271.24
" " " 1894.....	106	41,984.61
Total.....	872	406,976.28

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.  
(From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1894.	1893.	1892.	1894.	1893.	1892.
No. vessel pass'ges	14,491	12,008	12,580	3,352	3,341	3,559
T'n'ge, net registd	13,110,366	9,849,754	10,647,203	8,039,105	7,659,068	7,712,028
Days of Navigat'n	234	219	223	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

A NEW RULE adopted by the steamboat inspection service would seem to cut down materially the capacity of life boats, as compared with the rule previously in force. The new rule provides this method of determining the capacity of such boats: Multiply together the outside length, outside width and inside depth, and then multiply the sum of this by .6; divide this by 10 for ocean, lake, bay or sound steamers; for river steamers divide by 7; the quotient in either case will be the number of persons the boat is allowed to carry. According to this rule a boat 20 feet in length, 5 feet in breadth and of 3 feet inside depth would be allowed but 18 persons. A few of the big passenger boats on the lakes like the North West that engage strictly in passenger business are fully equipped with life boats and life rafts to accommodate their entire passenger list at any time, but there is no denying the fact that under the excursion guise most of the passenger lines operating side-wheel boats take on big lists of passengers for long trips, sleep them on cots and otherwise crowd their facilities, while providing positively less than one-tenth of the life raft and life boat accommodations demanded by the rule just quoted. Of course there are floats, such as pieces of plank and other light material, carried on deck, but the steamboat inspection service would find plenty of room to enforce this feature of its regulations on the lakes if it is ever the intention of the heads of the service to do so. And it is quite certain also that omissions of this kind are not to be found on the lakes alone.

SENATOR McMILLAN of Michigan, whose influence in Washington is far-reaching, is quoted as saying that he will endeavor to secure appropriations in the next congress for three composite gunboats, similar to the six authorized in the last naval bill, to be built on the lakes and maintained exclusively in lake service. Senator McMILLAN will ask for these war vessels on the claim, it is said, that lake cities would be exposed to grave dangers in event of serious differences with Great Britain, and that Canada has already violated treaty stipulations by building on the lakes formidable war vessels under the pretence that they were simply for the protection of fisheries. If Michigan's distinguished representative in the United States senate will lay aside the question of building war

vessels for defense on the lakes and simply try to overcome the treaty stipulations that now prevent lake ship builders from bidding on gunboats, torpedo vessels and other small craft, which they can build and deliver on the Atlantic coast in competition with any of the builders of the country, it would seem that he would be undertaking a task that is easier of accomplishment, and which would be more beneficial to the lakes in its results. Mr. McMILLAN could probably urge a change of this kind in treaty stipulations with more force than any representative of the lakes in congress, and if he will only give early notice of his intention to do so he will undoubtedly find that the ship builders and other interests on the lakes stand ready to support him in the movement.

CAPT. JAMES MILLAN, chairman of the committee appointed at the last annual meeting of the Lake Carriers' Association to look after the matter of overcoming, as far as possible, the abuses practiced in the fueling business, has been actively at work with President Livingstone, and it is confidently expected that signatures now secured to the agreement are sufficient to at least prevent the purchase of fuel under any circumstances from hard coal shippers of Buffalo. An effort is being made to secure a meeting in Cleveland shortly of all committees on freight handling matters appointed at the last annual meeting of the association. It is thought best to fix up these matters, if possible, before anything is done regarding a schedule of wages for the coming season.

THE NEW YORK HERALD devotes a page in its issue of Sunday, the 10th, to Promoter Chauncey N. Dutton's wild scheme for a lake-Atlantic ship-canal that would dwarf the project upon which the government of Canada has been at work for twenty years past, and the newspapers of Cleveland have for weeks past been giving up columns to what the opinion of the Cleveland chamber of commerce is to be regarding Pittsburg's dream of a ship-canal from Lake Erie to the seaboard. If newspapers and commercial bodies that indulge in this sort of visionary speculation were charged with chasing rainbows they would be very much offended.

### A Brighter Outlook.

All Cleveland vessel owners and brokers who are now keeping a close watch of the conditions in the iron business that are certain to have a bearing on the lake freight situation, are of the opinion that the owner who ties up to low contracts this season will make a mistake. It is generally expected that one month following another will bring improvement in the general condition of business throughout the country. Although present conditions may cause some ore carrying contracts to be made, when any business presents itself, at even less than 80 cents from the head of Lake Superior, the number of boats accepting such rates will undoubtedly be very limited. There is every reason to expect a very late opening of navigation, due to natural causes, and the business offering at the outset will anyhow be limited so as to cause general delay in the movement of vessels. The amount of ore to be moved will certainly be very heavy, and it would not be surprising if the shipments of 1895 exceed all previous records.

Among Cleveland bankers, whose relations with men in the iron business and the various manufacturing interests allied to that industry are of the closest kind, the feeling during the past few days has been decidedly encouraging. The consumer is becoming confident of improvement in all lines of trade. Banks are reaching their limit in loans, and the question now with the iron ore producer and vessel owner has reference to whether better prices will come in time to enter into the settlement of sales and freight contracts for the coming season's business.

### New Ship Building Orders.

It was expected that the management of the Cleveland and Buffalo Transit Company would close a contract this week for the new side-wheel steamer, which is to be gotten ready for service in the spring of 1896, but the matter is again delayed. The management of the C. & B. line has settled upon a side-wheel boat to have beam engines of the W. & A. Fletcher Company type and Scotch boilers. As the boat is to cost about \$350,000, and is expected to be finer than either of the big boats of the Detroit and Cleveland line, there is quite a strife between the Globe Iron Works Company of Cleveland and the Detroit Dry Dock Company for the contract. Bids of the other companies are also being considered, but the efforts of the two big concerns referred to are of a special kind, as neither of them is now quite as well provided with work as some of the smaller yards.

The promoters of the proposed canal boat line between Cleveland and New York are still at work, and stock subscriptions thus far secured are sufficient to warrant the belief that probably \$50,000 will be expended in the construction of a few boats to make a trial of the scheme, which contemplates direct shipments between Cleveland and New York in steel canal boats.

Brown Steamship Company, Cleveland, O.: Steamer—Castalia, Capt. C. C. Allen, Engineer James Hay.



### Latest Naval Appropriations.

The full text of that part of the latest naval act providing for two battle ships, six light-draft composite gunboats and three torpedo boats is as follows:

"That for the purpose of further increasing the naval establishment of the United States the president is hereby authorized to have constructed by contract two sea-going coast-line battleships designed to carry the heaviest armor and most powerful ordnance upon a displacement of about 10,000 tons, to have the highest practicable speed for vessels of their class, and to cost, exclusive of armament, not exceeding \$4,000,000 each; and six light-draft composite gunboats of about 1,000 tons displacement, to be fixed by the secretary of the navy, and no one of which shall cost more than \$230,000, or in all for said six gunboats, \$1,380,000, exclusive of armament, and not more than two of said gunboats shall be built in one yard, or by one contracting party, and in each case the contract shall be awarded by the secretary of the navy to the lowest best responsible bidder; and three torpedo boats, at a cost of not exceeding \$175,000 each; and, subject to the provisions hereinafter made, one sea-going battleship and one of said torpedo boats shall be built on or near the coast of the Pacific ocean, or in the waters connecting therewith, and one torpedo boat on the Mississippi river, and one torpedo boat on the coast of the Gulf of Mexico; and in the construction of all said vessels all of the provisions of the act of August 3, 1886, entitled 'an act to increase the naval establishment,' as to materials for said vessels, their engines, boilers, and machinery, the contracts under which they are built, except as to premiums, which are not to be offered, the notice of any proposals for the same, the plans, drawings, and specifications therefor, and the method of executing said contracts, shall be observed and followed, and said vessels shall be built in compliance with the terms of said act, save that in all their parts said vessels shall be of domestic manufacture; provided, that if it shall appear to the satisfaction of the president of the United States, from the biddings for the contracts for either of said torpedo boats, and for one of the foregoing battleships to be built on the Pacific coast, when the same shall be opened and examined by him, that the said torpedo boats or battleships can not be constructed at a fair cost at the places fixed in the proposals and biddings, he may authorize the construction of said torpedo boats, or any of them, or the battleship the biddings for which provide for building upon the Pacific coast, elsewhere in the United States, subject to the limitations as to cost hereinbefore provided; and any of the ships, gunboats and torpedo boats provided for in this act may be constructed of steel or other metal, or of alloy, except where it is otherwise provided in this act, and one of said battleships shall be named Kearsarge."

For armament and armor the act appropriates \$4,837,670, of which \$2,000,000 is to be made immediately available. The act also contains this clause: "Construction and steam machinery.—On account of the hulls and outfits of vessels and steam machinery of vessels heretofore and herein authorized, \$8,342,422, of which sum \$2,000,000 is to be made immediately available."

### Regular Speed of Atlantic Liners.

Post office department records show that the Atlantic liners are about as regular as the railroad trains in time of arrival and departure. In 1893 the Campania made eight trips and her average voyage was 5 days, 20 hours and 18 minutes; on ten trips in 1894 the average was 5 days, 20 hours and 17 minutes. Similar regularity in time of voyage is maintained by other leading liners, as indicated by the following table:

STEAMERS.	1893.				1894.			
	NO. OF TRIPS, ONE WAY.	AVERAGE TIME OF VOYAGE.			NO. OF TRIPS, ONE WAY.	AVERAGE TIME OF VOYAGE.		
		D.	H.	M.		D.	H.	M.
Campania.....	8	5	20	18	10	5	20	17
Teutonic.....	12	6	4	8	11	6	4	17
Etrunia.....	...	6	6	47	...	6	7	27
Havel.....	10	7	7	38	9	7	7	24
Furst Bismark.....	9	7	0	15	6	7	0	54
Columbia.....	9	6	22	12	6	6	22	8
New York (west bound).....	14	6	21	31	15	6	21	45
New York (east bound).....	13	6	20	30	15	6	20	24

### Soft Coal Matters.

At this time of year coal dealers are interested in figures of any kind relative to the lake coal business. A summary of stocks on dock at upper lake ports would be especially interesting just now, but the coal companies make no regular statements of this kind, and are not, in fact, disposed to give out definite information on the subject. It is understood, however, that stocks to be carried over will be somewhat heavier than was expected. The following table gives the shipments for three years past

from Ohio ports in the Cleveland custom district. Although printing these figures, the REVIEW does not place very much reliance in them, as it is well known that on account of irregularities in customs laws, a vessel is liable to clear light from any of these ports and load at another of them (they are all in the same district) without making a report of cargo taken on at the second port:

PORTS.	1892.		1893.		1894.	
	NET TONS CARGO.	NET TONS FUEL.	NET TONS CARGO.	NET TONS FUEL.	NET TONS CARGO.	NET TONS FUEL.
Cleveland .....	1,290,890	437,941	1,267,575	254,982	912,037	205,857
Ashtabula.....	618,379	107,888	715,179	72,474	604,708	74,413
Conneaut.....	.....	.....	13,886	.....	89,023	2,642
Fairport.....	*114,738	.....	*210,390	.....	*291,537	.....
Lorain .....	379,509	5,649	533,149	7,045	343,524	8,788
Total.....	2,403,516	551,478	2,740,179	334,501	2,240,829	291,700

\* Includes fuel.

### Blue-Prints of Boilers.

In accordance with a new rule adopted by the supervising inspectors of steam vessels at their meeting in Washington a few weeks ago, the manufacturer of any boiler to be used for marine purposes will hereafter be required to furnish the inspector of the district where such boiler is to be constructed with a blue-print or tracing descriptive of same for approval. The blue-print or tracing is to be kept on file in the office of the local inspector. The manufacturer will also be required to furnish information regarding material composing rivets and size of same, as well as size and pitch of rivet holes. This is information additional to the usual affidavit already given in connection with the construction of marine boilers.

### In General.

C. P. Huntington, railway capitalist and owner of the big ship building plant at Newport News, Va., says he will be very much surprised if this country does not have from now on five as good business years as it has known within fifty years.

Capt. Leonard P. Shepard, chief of the revenue cutter service, whose death was announced a few days ago, had been in the service for thirty years and was chief since December, 1889. Capt. Charles F. Shoemaker will probably succeed to the office of chief.

Owners of the Yankee Doodle, Vamoose, Rex, Judge and other fast steam yachts and launches around New York have agreed upon terms for a race which is to take place on Long Island sound some Saturday in June. Members of New York yacht clubs are to be in charge of the race, which is to be for a cup offered by Frank T. Morrill.

In view of the manner in which leading naval officials have been watching advances made by other countries in the construction of battleships, it is claimed that the two new ships for which appropriations were obtained from the last congress will not only be without an equal but without a rival in the world in perfection of design, arrangement and speed.

The last issue of the Iron Trade Review contained a very full report of the proceedings of the meeting of the Lake Superior Mining Institute, held in connection with a trip of inspection among the leading iron mining properties of Minnesota. The very thorough manner in which news of this kind is now looked after by the Iron Trade Review prompts the opinion that that journal is now more reliable in the branches of the iron industry to which it gives special attention than any other publication devoted to the iron business.

The magnitude of the shipping industry of the great lakes can not be imagined by anyone who has not taken part in it. What sea-coast ship-master would believe that there are in all about 1,400 vessel masters employed on large freight and passenger in the season of navigation in the lake traffic, and that there are 1,078 who belong to an organization which is known as the Ship Masters' Association, which has branch organizations in almost every lake port. This is a regiment, and suggests the idea that the navy would not suffer for volunteer officers should hostilities develop with other nations.—Marine Journal, New York.

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### Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store and afloat at the principal points of accumulation on the lakes on March 16, 1895:

	Wheat, bushels.		Corn, bushels.	
	In store.	Afloat.	In store.	Afloat.
Chicago .....	24,693,000	1,874,000	4,874,000	2,234,000
Duluth .....	11,455,000	85,000	1,000	.....
Milwaukee.....	660,000	.....	.....	.....
Detroit.....	1,342,000	257,000	160,000	.....
Toledo .....	2,262,000	299,000	735,000	.....
Buffalo .....	2,791,000	295,000	98,000	603,000
Total.....	43,203,000	2,810,000	5,868,000	2,837,000

### Trade Notes.

On all of the Detroit river transfer boats Superior graphite paint is used. It is the product of the Graphite Manufacturing Company, Detroit, Mich.

The Scientific American of the 16th inst. contains an article profusely illustrated on the manufacture of naphtha launches by the Gas Engine & Power Company of New York city.

"A Spring Time Greeting" is the title of a little calendar sent out by Frank G. Overbeke, 112 Woodland avenue, Cleveland. It is in keeping with the neatness of yachting costumes that have made a valuable business name for Mr. Overbeke.

F. T. Holt, representing L. Katzenstein & Co., New York, patentees and manufacturers of Katzenstein's metallic packing, has been in Cleveland during a few days past looking after big orders for packing taken from the Johnson Steel Company of Lorain and the Cleveland Rolling Mill Company.

Francis Line, Cleveland agent of the Keasbey & Mattison Company, reports orders for full 20,000 feet of magnesia boiler and pipe covering to be used in the new steel plant of the Johnson company at Lorain. Boilers and pipes of the Cleveland & Buffalo line steamer State of Ohio and the latest of the Cleveland fire boats are also to be fitted with this covering.

S. F. Hodge & Co of Detroit now have under way at their works three fore-and-aft compound engines for the two car ferries being built by the Craig Ship Building Company of Toledo; two triple expansion yacht engines for steel yachts which the Detroit Boat Works is building for Merrill B. Mills and Edward Henkel of Detroit, and another triple expansion engine for the wooden passenger boat being built by E. W. Heath of Benton Harbor, Mich., for Geo. T. Arnold.

"One of the pleasing features of our business," says a representative of the American Ship Windlass Company, manufacturers of Providence windlasses and capstans, "is the readiness and satisfaction with which any part of our machinery is found to fit in place in case of accident requiring repairs of any kind. The different parts of the machines are sure to go into place without chipping or filing, and in many instances our agents around the lakes supply orders for machinery without delay of any kind."

L. Black & Co., well known Detroit dealers in optical goods, again direct attention, with the opening of another season of navigation, to their line of barometers, marine glasses, compasses and telescopes. This firm's goods are all of direct importation from the best makers of Europe. This firm also employs expert workmen for repairing marine glasses, adjusting barometers and refilling and recharging compasses. A specialty is made of the marine branch of their business and they invite vessel masters and others to call on them at any time with a view to examining their stock and facilities for services of the kind noted. Their store is at 145 Woodward avenue, close to the center of marine interests in Detroit.

### Practical Information about Injectors.

"Practical Information about Injectors" is the name given to a little book by the Hayden & Derby Manufacturing Company of No. 113 Liberty street, New York. In this book the Hayden & Derby company has endeavored to embody some general hints as to what comprises a perfect injector. The greater part of the information which it contains has never before been printed, and on this account it will be appreciated by all users of steam. On one page is noted tables giving the range of the automatic type of injector with feed water at 60, 75, 100 and 115 degrees and lifts 2, 4, 6, 8, 10, 12, 14, 16, 18 and 20 feet; and on another page there are detailed tables of the capacities of the Metropolitan automatic injectors under various steam pressures and when used on various lifts. Under the heading of "Double Tube Injectors" there is given the range under the various conditions to be found in practice, with similar tables referring to the Metropolitan double tube injectors. It is the desire of the Hayden & Derby company to send this work out free, and they say they will be pleased to send a copy of the book to anyone applying for it.

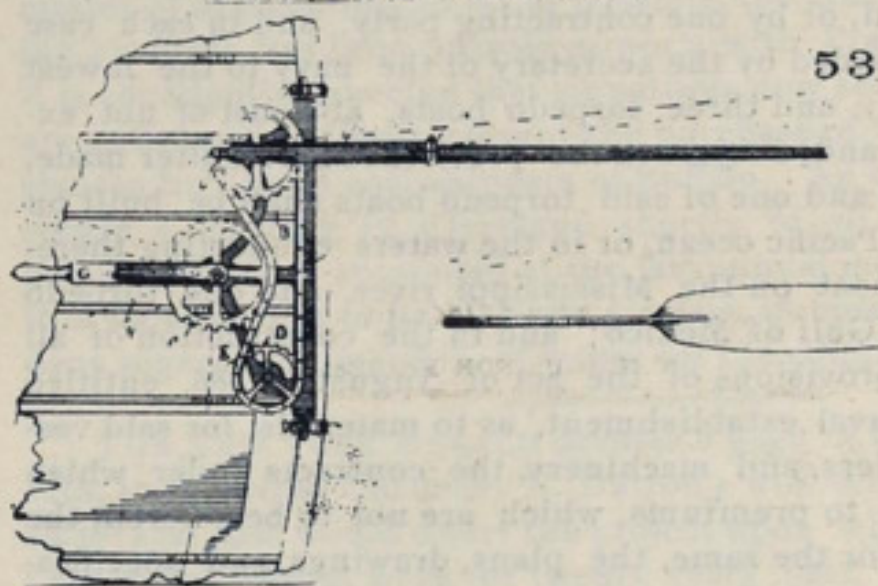
### Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

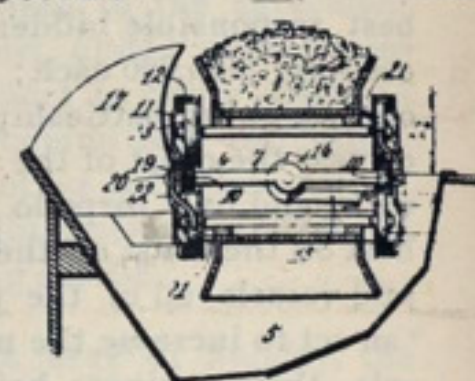
535,584. Jointed Oar. Frederick Harbers, Peoria, Ill. Filed Aug. 16, 1894. Serial No. 520,456.

Claim—In a jointed oar for boats, a supporting frame suitably mounted on the boat, a swinging pivotal support on said frame, an oar handle mounted on said pivotal support by suitable means and capable of a swinging horizontal movement in either direction, an oar also mounted on the said pivotal support by a suitable swinging support and capable of a swinging horizontal movement in either direction, said oar being also capable of a partial revoluble movement on said swinging sup-

535,584. JOINTED OAR.



535,647. CAR-DUMPING APPARATUS.



port by means of a pivotal connection of the extremity and the loom of said oar with said swinging support and means for raising the oar blade in a horizontal position and consisting of a spring forming connection with the oar and the pivotal support and a hinged joint to support the loom to allow a free movement of the oar.

535,647. Car Dumping Apparatus. Alexander Walker, What Cheer, Iowa. Filed Dec. 5, 1894. Serial No. 530,912.

Claim—In a car dumping apparatus, the combination with a tilting track section having parallel longitudinally arranged guards or lock bars 12 on opposite sides both above and below to engage the wheels of a car and support it in an inverted position, of the longitudinally arranged rock shafts 19 journaled to opposite sides of the tilting sides of the tilting track section and each provided near the ends with stop arms 21 adapted to clasp the bumper beams of a car and each having a central stop arm 22 to engage between the wheels of a car, the said stop arms on the respective rock shafts being arranged to project in opposite directions.

U. S. ENGINEER OFFICE, 157 Ottawa St., Grand Rapids, Mich. March 5, 1895. Sealed proposals will be received here until 12 o'clock noon, April 4, 1895, and then publicly opened, for Breakwater construction at Petoskey, Mich., and for Pier extensions at Frankfort Harbor, Mich. Specifications furnished on application to G. J. LYDECKER, Lt. Col., Engrs. April 1

OFFICE OF LIGHT-HOUSE BOARD, Washington, D. C., March 11, 1895. Sealed proposals will be received at this office until 2 o'clock P. M. on Thursday, the 11th day of April, 1895, for furnishing the materials and labor of all kinds necessary for the construction and delivery of one first-class composite Light-Vessel No. 66 for a fixed sum for said vessel delivered. Forms of proposals, plans, and specifications, showing what is required, can be had or seen by applying to this office. The right is reserved to reject any or all bids and to waive any defects. JOHN G. WALKER, Rear-Admiral, U. S. N., Chairman. 21

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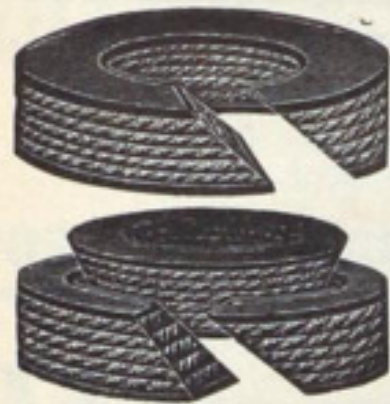
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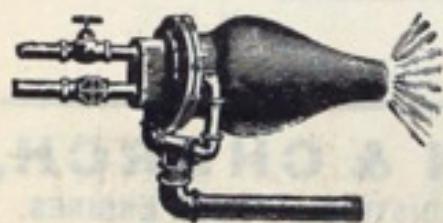


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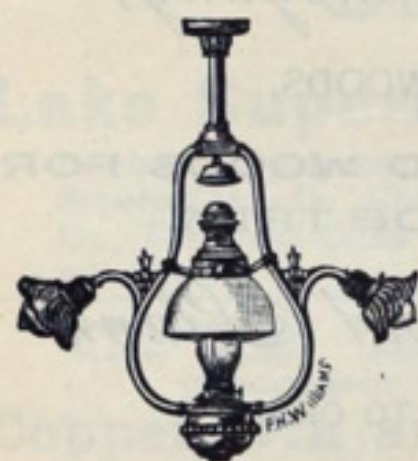
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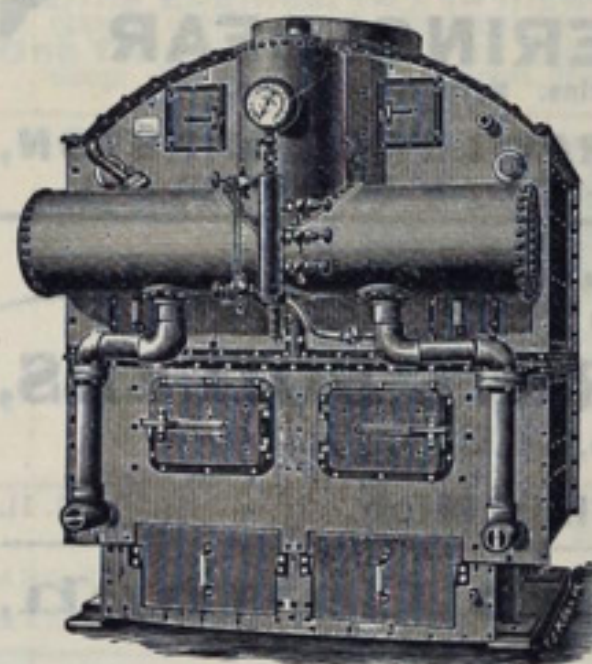
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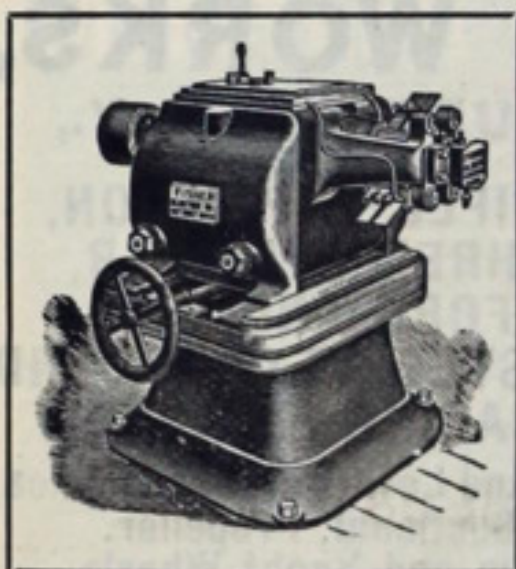
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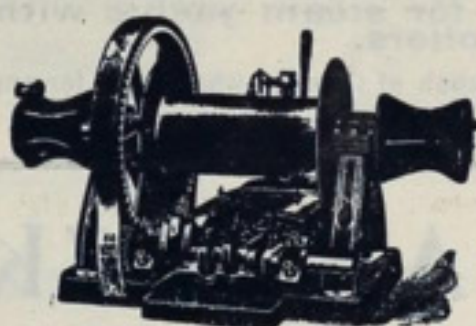
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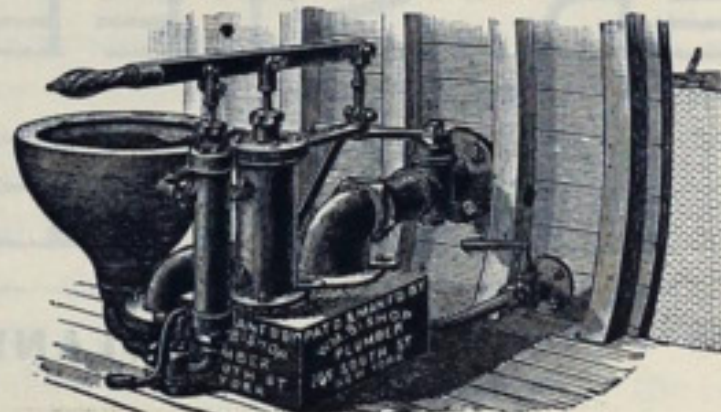
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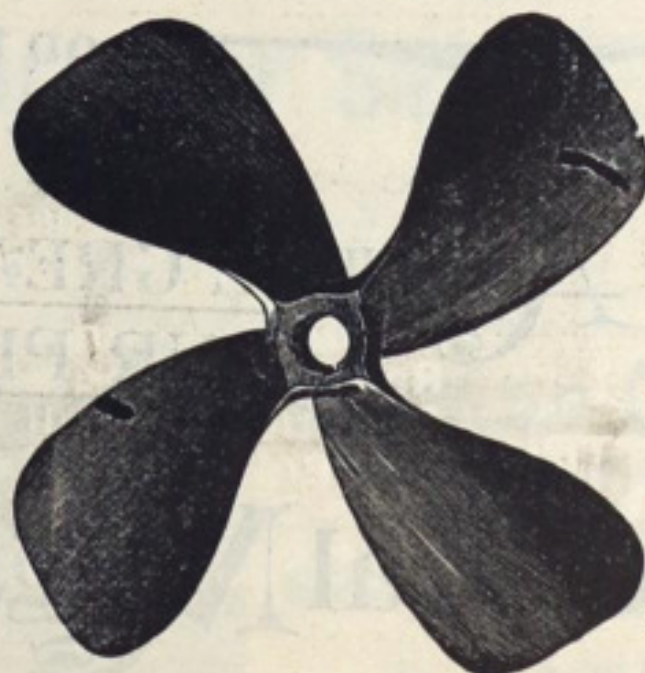
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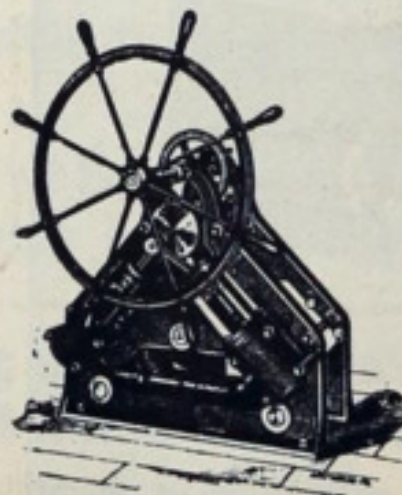
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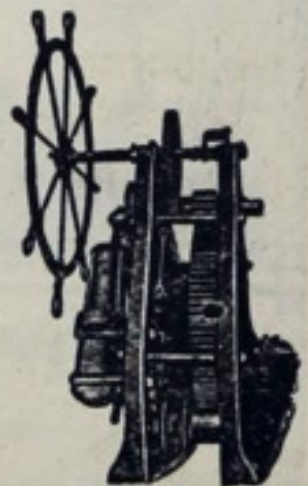
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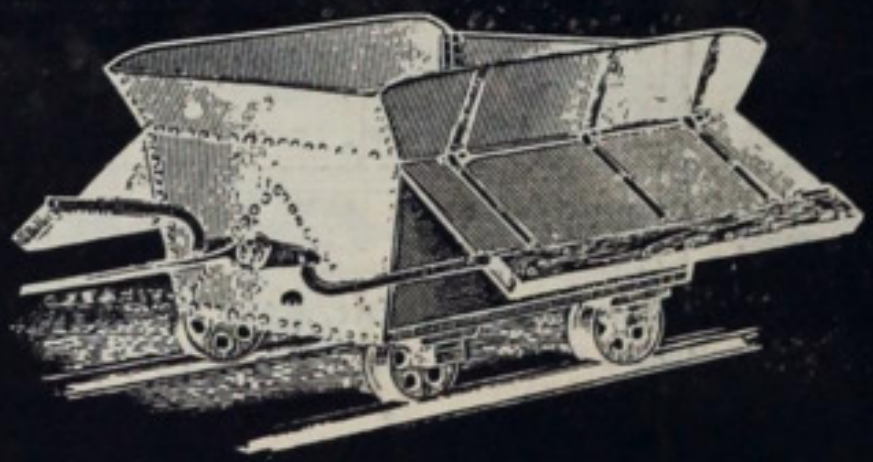
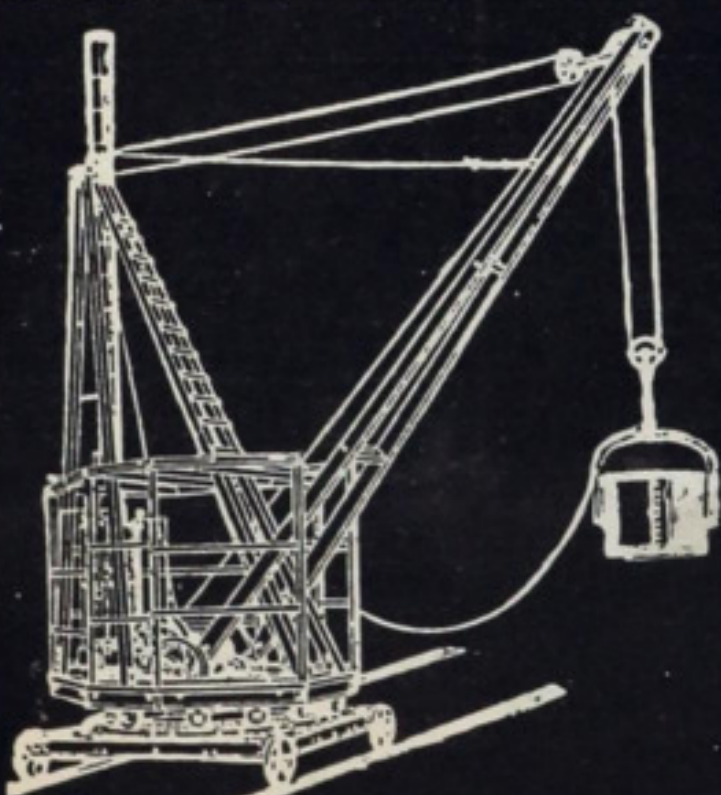
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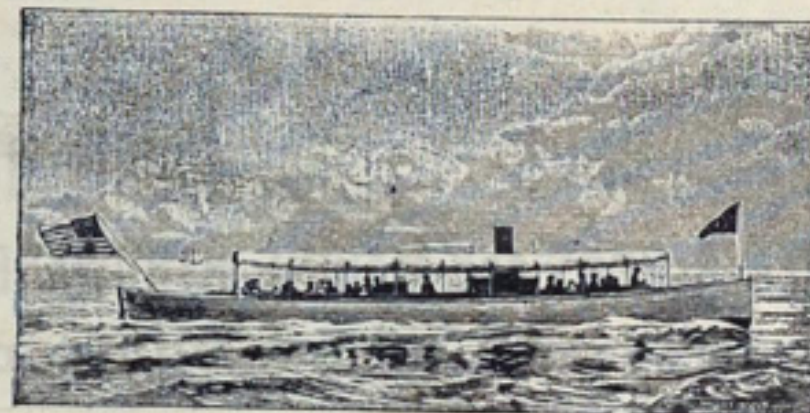
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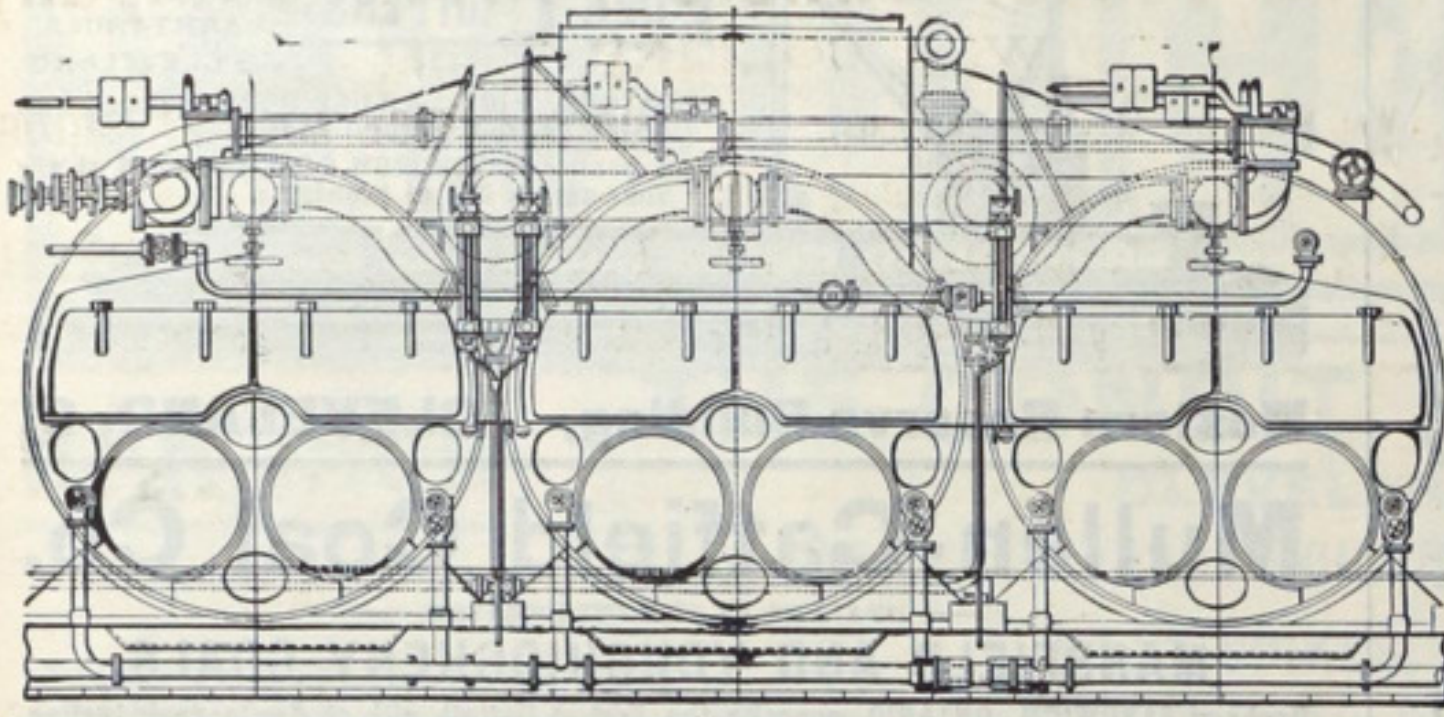
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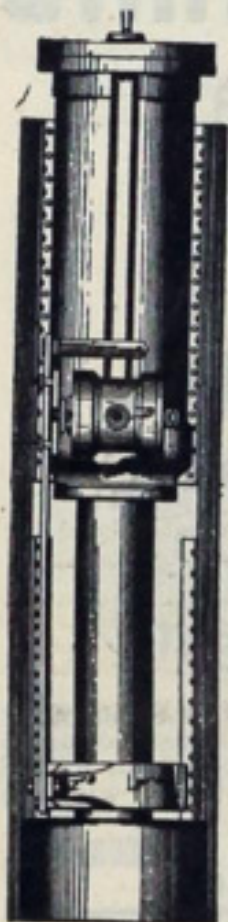
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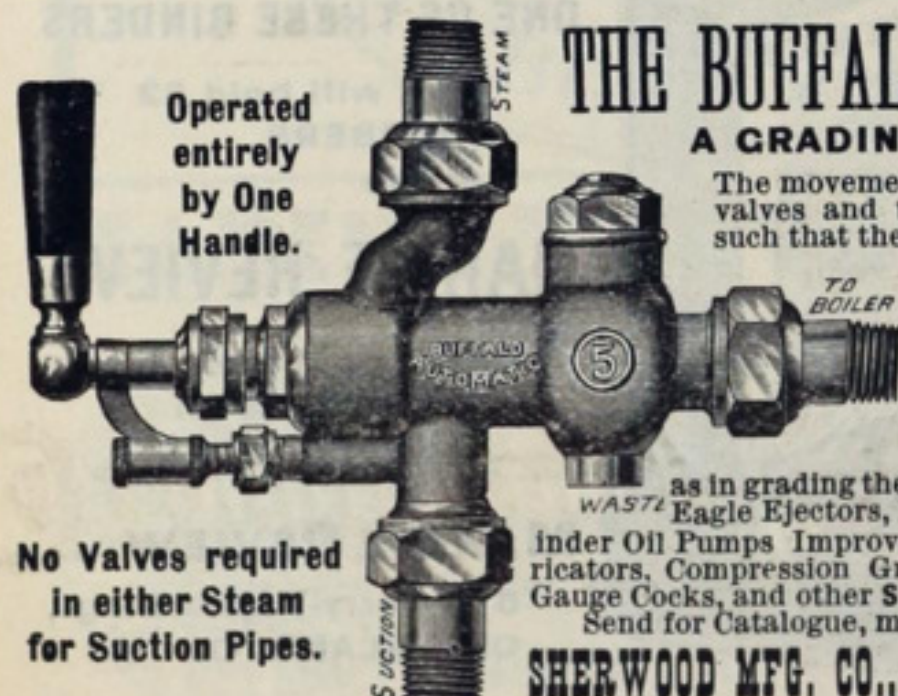
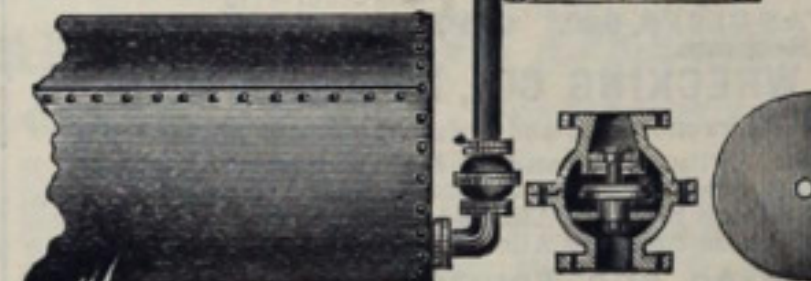
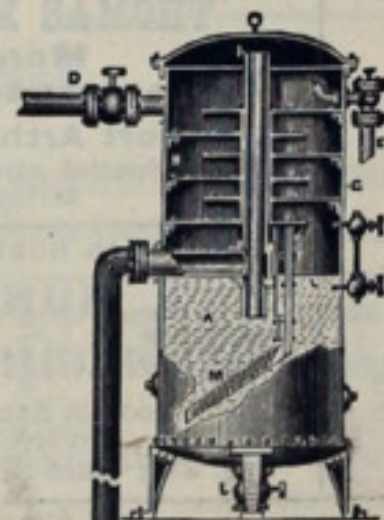
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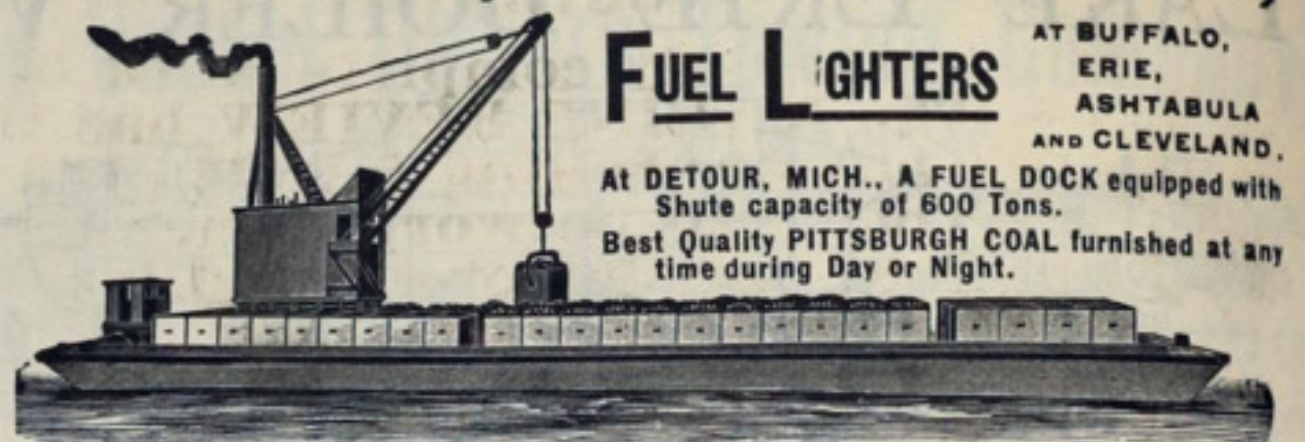
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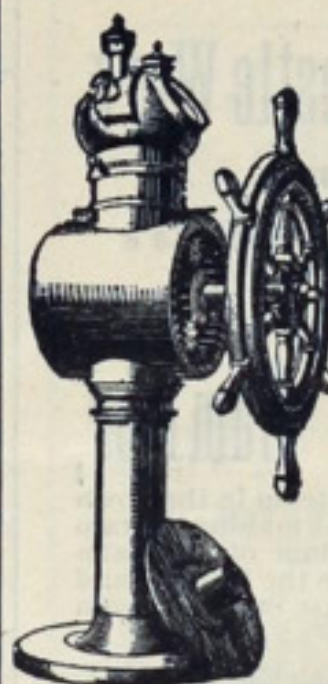
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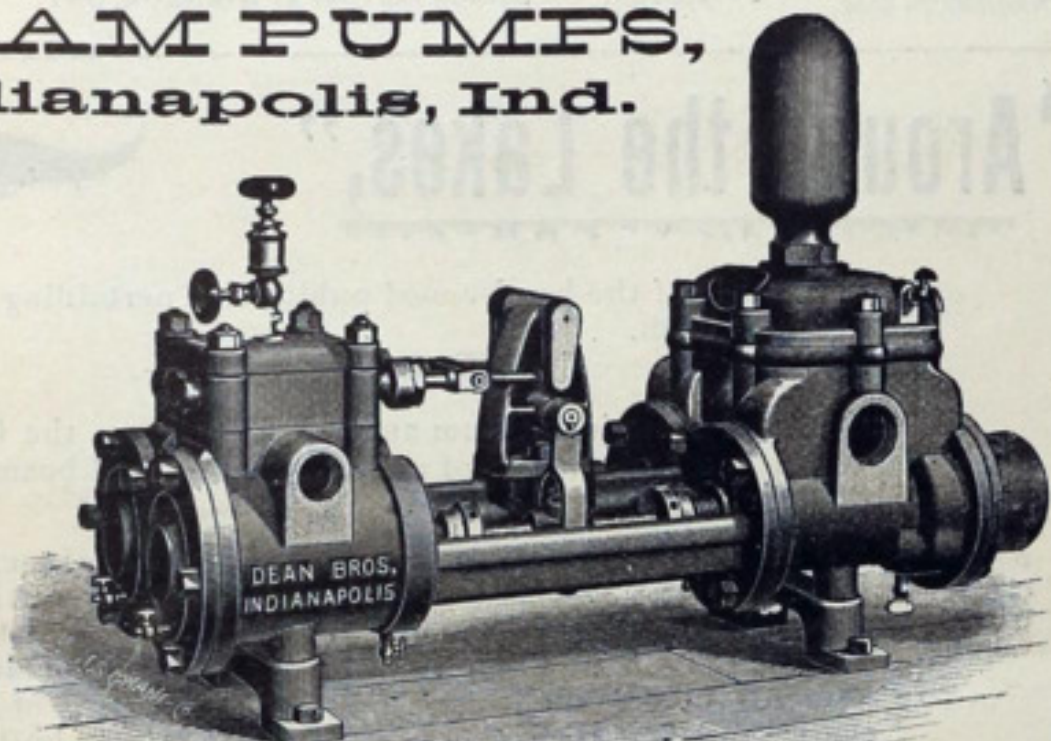
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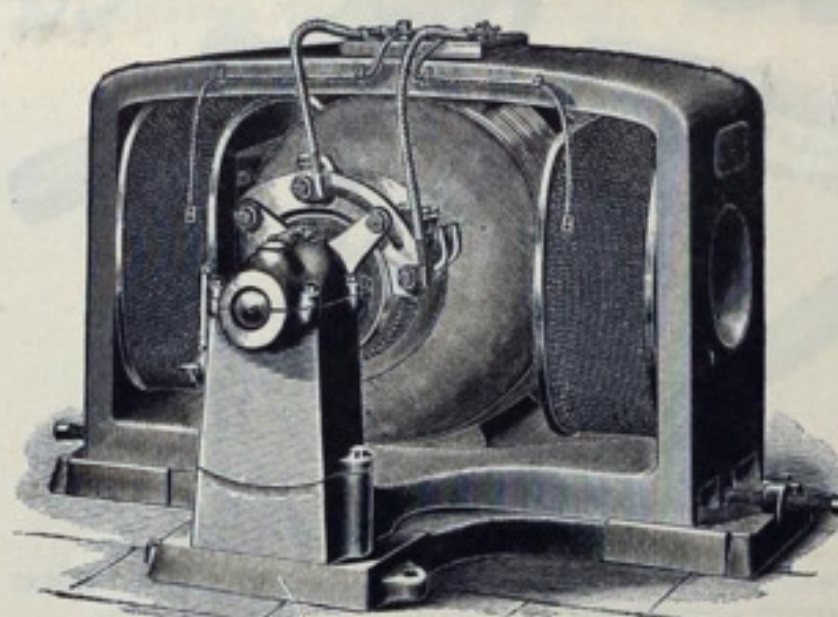
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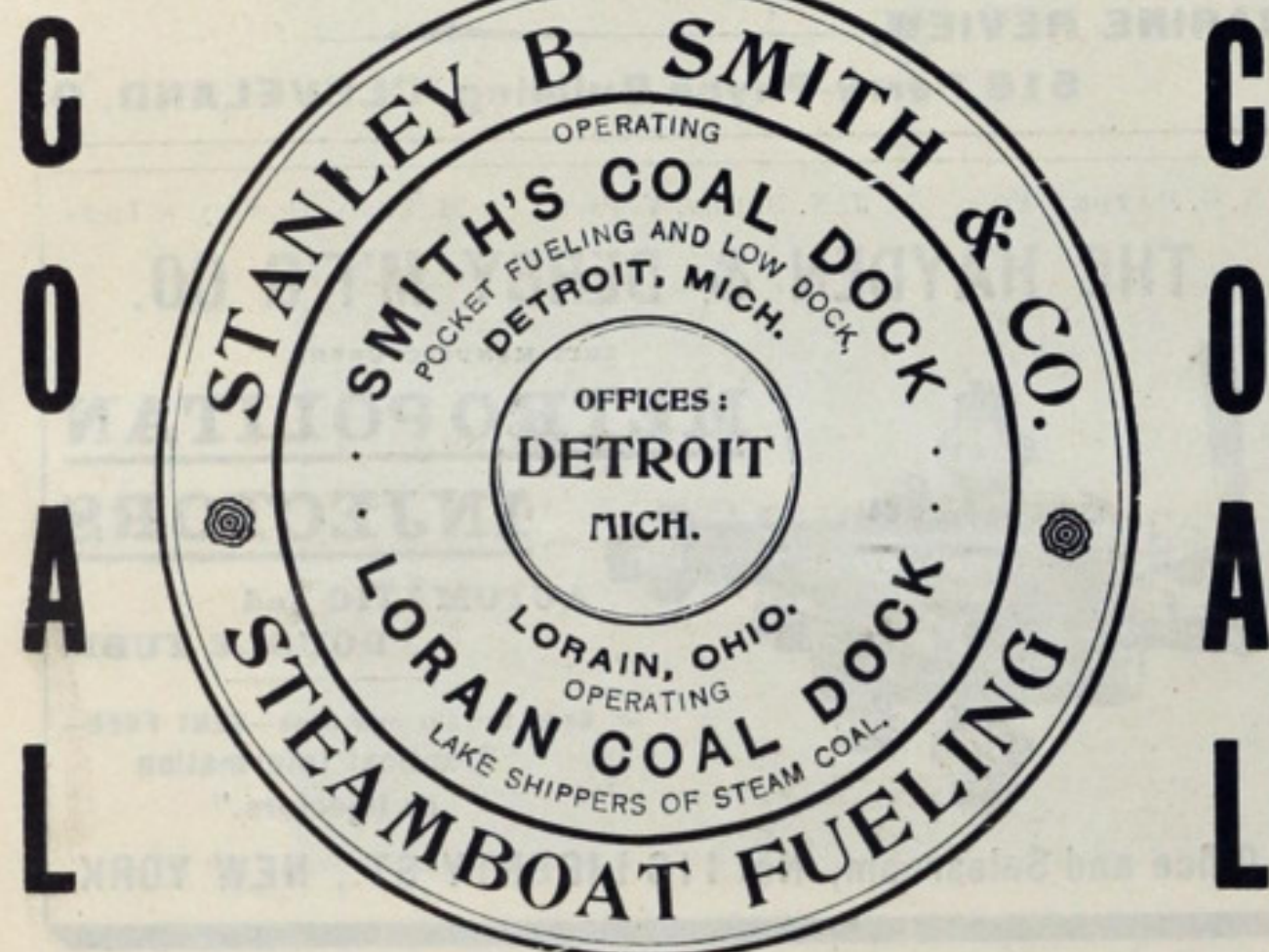
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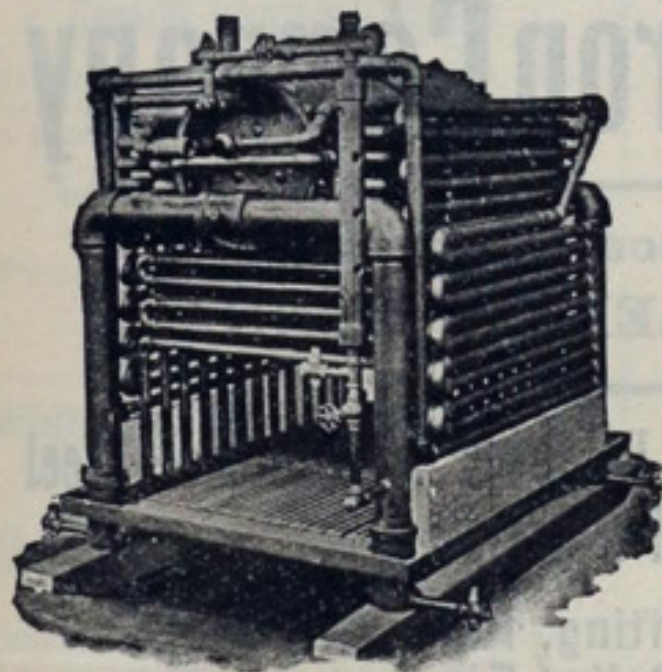
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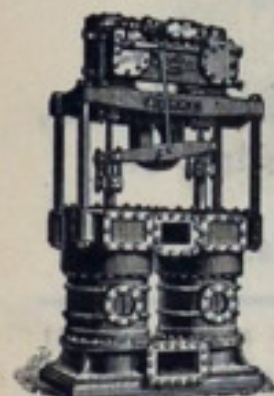
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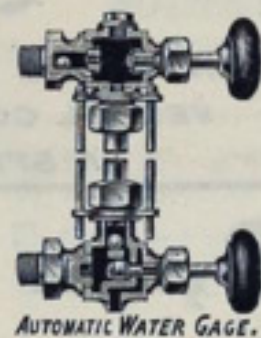
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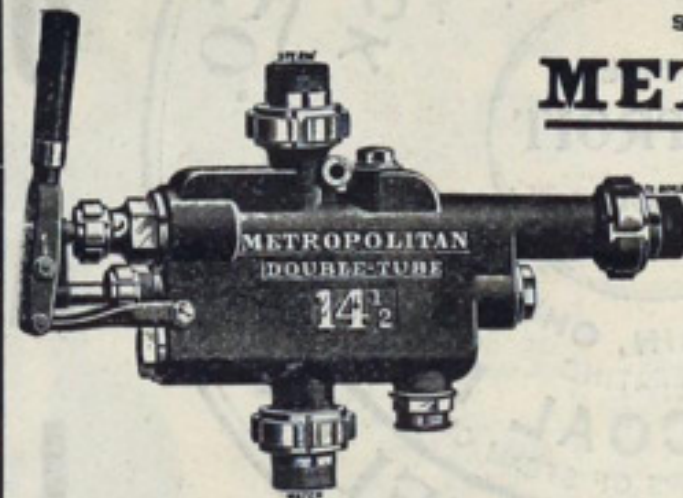
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